IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application : **09/763,845**

Applicant(s) : **HERRMANN, Christoph**

Filed : **2/27/2001**

Confirmation : **5206**

T.C./Art Unit : **2611**

Examiner : **AHN, Sam K.**

Atty. Docket : **D-099088**

Title: **WIRELESS NETWORK FOR REQUESTING A CONTENTION CHANNEL**

Mail Stop: **APPEAL BRIEF - PATENTS**
Commissioner for Patents
Alexandria, VA 22313-1450

APPEAL UNDER 37 CFR 41.37

Sir:

This is an appeal from the decision of the Examiner dated 20 February 2008, finally rejecting claims 14-40 of the subject application.

This paper includes (each beginning on a separate sheet):

1. **Appeal Brief;**
2. **Claims Appendix;**
3. **Evidence Appendix; and**
4. **Related Proceedings Appendix.**

APPEAL BRIEF

I. REAL PARTY IN INTEREST

The above-identified application is assigned, in its entirety, to **Koninklijke Philips Electronics N. V.**

II. RELATED APPEALS AND INTERFERENCES

Appellant is not aware of any co-pending appeal or interference that will directly affect, or be directly affected by, or have any bearing on, the Board's decision in the pending appeal.

III. STATUS OF CLAIMS

Claims 1-13 are canceled.

Claims 14-40 are pending in the application.

Claims 14-40 stand rejected by the Examiner under 35 U.S.C. 103(a).

These rejected claims are the subject of this appeal.

IV. STATUS OF AMENDMENTS

No amendments were filed subsequent to the final rejection in the Office Action dated 20 February 2008.

V. SUMMARY OF CLAIMED SUBJECT MATTER

This invention addresses the management of communications in a wireless network comprising a base station and a plurality of terminals. In an example embodiment, contention channels are not continuously available, but can be made available based on a request by at least one of the terminals (Applicant's specification, page 2, lines 14-19). When the base station receives the request, the base station allocates a channel to be a contention channel, and notifies all of the terminals that this contention channel is now available (page 6, lines 20-22). In an example embodiment, the base station may set a duration of time that the contention channel is available for use (page 8, lines 14-15). While the contention channel is available for use, any terminal may communicate with any other terminal, as well as the base station (page 7, lines 2-4).

As claimed in independent claim 14, an embodiment of the invention comprises a wireless network (FIG. 1) that includes:

a base station (1) in communication with a plurality of terminals (4-7);

at least one terminal of the plurality of terminals operable to be assigned to a radio cell of the base station for exchanging user data and control data (page 4, lines 14-15), the terminal being further operable to transmit a first signaling sequence as an indication to use one of a plurality of contention channels (page 5, lines 25-29);

wherein the base station, upon receiving the first signaling sequence, is operable to broadcast a provision message indicating a channel that is available to the plurality of terminals for contention-based access (page 6, lines 20-22).

As claimed in independent claim 24, an embodiment of the invention comprises a base station (1) in a wireless network for exchanging user data and control data with a plurality of terminals (4-7) operable to be assigned a radio cell, the base station comprising:

a receiver (FIG. 3) operable to detect a signaling sequence from at least one of the terminals (page 8, line 32 – page 9, line 2); and

a transmitter (FIG. 4) operable to transmit a provision message in response to the signaling sequence, the provision message indicating a channel that is available to the plurality of terminals for contention-based access (page 6, lines 20-25).

As claimed in independent claim 26, an embodiment of the invention comprises a terminal (4-7) operable to be assigned a radio cell in a wireless network for exchanging user data and control data with a base station (page 4, lines 14-15), the terminal comprising:

a transmitter (FIG. 6) operable to transmit a first signaling sequence to the base station, the signaling sequence being indicative of a request for a channel to be made available for contention-based access by the transmitter (page 5, lines 25-30); and

a receiver (FIG. 5) operable to receive a provision message from the base station subsequent to the transmission of the first signaling sequence by the transmitter, the provision message indicating the channel that is available to the terminal for contention-based access (page 6, line 26 – page 7, line 4).

As claimed in independent claim 33, an embodiment of the invention comprises a method of exchanging user data and control data in a wireless network between a base station (1) and a terminal (4-7) operable to be assigned a radio cell, the method comprising:

transmitting a signaling sequence from the terminal to the base station, the signaling sequence being indicative of a request by the terminal to use a channel for contention-based access (page 5, lines 25-29);

detecting the signaling sequence by the base station (page 6, line 20); and

broadcasting a provision message by the base station to the terminal in response to the request, the provision message indicating the channel that is available to the terminal for contention-based access (page 6, lines 20-25).

As claimed in dependent claim 20, an embodiment of the invention comprises the wireless network of claim 14, wherein the terminal is further operable to re-transmit the first signaling sequence to the base station with increased energy in response to a failure to receive an acknowledgement of the reception of the first signaling sequence by the base station within a predefined period of time after the first transmission of the first signaling sequence to the base station (page 8, lines 16-19).

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Claims 14-19 and 21-40 stand rejected under 35 U.S.C. 103(a) over Take et al. (USP 5,883,887, hereinafter Take) and Kanterakis (USP 6,389,056).

Claim 20 stands rejected under 35 U.S.C. 103(a) over Take, Kanterakis, and Crichton et al. (USP 6,330,459, herinafter Crichton).

VII. ARGUMENT

Claims 14-19 and 21-40 stand rejected under 35 U.S.C. 103(a) over Take and Kanterakis

Claims 14-19, 21-23, 33-34, 37-38, and 40

The combination of Take and Kanterakis fails to teach or suggest a terminal configured to transmit a signaling sequence as an indication to use one of a plurality of contention channels, and a base station, upon receiving the signaling sequence, configured to broadcast a provision message indicating a channel that is available to the plurality of terminals for contention-based access, as specifically claimed in independent claim 14. Independent claim 33 includes similar limitations.

In this rejection, the Office action relies on Take for teaching the broadcast of a provision message indicating a channel that is available to the plurality of terminals for contention-based access, in response to a request by a terminal for such a contention-based channel. Kanterakis does not address this aspect of the claimed invention.

Take teaches a conventional multi-channel network in which all channels (TCHs) that are not allocated for telephone calls (VCHs) are operated as contention channels (random access channels – RACH):

> "each of the base stations uses a plurality of TCHs as RACHS, characterized by means for controlling all TCHs unused for telephone calls as RACHs." (Take, column 2, lines 52-54.)
>
> "In this method, all TCHs managed in the base stations or the base station controller can be used as RACHs at the normal time and only when a telephone call occurs, one of the TCHs used as the RACHs can be used as a VCH, so that the channel use efficiency can be increased." (Take, column 10, lines 42-46.)

Take's base station maintains five states for each channel: unassigned, occupied, departure, inhibition, and idle, and routinely broadcasts the current state on each random access channel (Take, column 10, lines 55-60; column 11, lines 26-32).

If the random access channel state is "unassigned", it can be used by any station for sending data:

> "one mobile station having a transmission packet can omit the process of shifting to CCH and receiving assignment of another RACH from the base station and can autonomously shift from one RACH to another and detect an unassigned RACH for sending a packet." (Take, column 11, lines 15-20.)
>
> "When an RACH is in the unassigned state, mobile stations sending a segment on the RACH do not exist and every mobile station acquiring the RACH can send a packet." (Take, column 10, lines 60-63.)

Alternatively, as suggested in the above cites, if a station desires contention-free access to a channel, it can explicitly request such access via the command channel (CCH); if such access is granted, the state of the random access channel is changed to "occupied", and unassigned devices are prohibited from using this channel:

> "The base station receives the segment normally, sets the channel state to the occupied state, and notifies the mobile station of channel information with the identification code of the mobile station on the down link channel, thereby granting permission of access to the TCH to the mobile station." (Take, column 11, lines 8-13)
>
> "The occupied state is a state in which a mobile station is sending a packet on the RACH and other mobile stations than the mobile station are inhibited from transmitting a packet." (Take, column 10, lines 63-66.)

As indicated in the above, using the terminology of this application, all of Take's channels are operated in a contention mode, accessible by all terminals, unless otherwise allocated. Take's base station places these channels in contention mode regardless of any requests from the terminals. Take's terminals do not need to send a request to have a channel made available for all terminals to use as a contention channel, because this is the default state of all of Take's channels. Contrary to the applicant's teachings of a terminal requesting the creation of a contention channel, Take teaches eliminating contention on a channel upon request from a terminal.

The Office action references Take's "RACH use Request", and asserts that in response to this request, Take's base station broadcasts a provision message indicating a channel that is available to the plurality of terminals for contention-based access; the applicant respectfully disagrees with this assertion.

Take's "RACH use Request" is the aforementioned request sent by a terminal to expressly request contention-free access to an existing random access channel. In response to this request, the base station notifies the requesting terminal of an available random access channel, and in response to a subsequent message from the terminal on the assigned channel, sets the state of the channel to "occupied", thereby substantially eliminating contention on the channel for the requesting terminal (Take, column 11, lines 8-13, presented above). As taught by Take, a station that had been on the random access channel that has now become "occupied" can switch to a next-available random access channel if it has data to send, thereby maintaining throughput when this contention-free access is granted (Take, column 11, lines 15-20, presented above).

Take's FIG. 5 clearly illustrates the above process. Take's base station receives a RACH use Request, at S0114. If the base station has an existing RACH that can be assigned to the requesting terminal, at S0115, it assigns that RACH to the requesting terminal, at S0116. Of particular note, step S0116 refers to the mobile station in the singular; Take does not teach or suggest assigning the channel for use by all of the mobile stations in response to this request. Contrarily, because the channels are available to all the mobile stations for contention access by default, step S0116 effectively removes the right to contention access by all of the stations and expressly assigns the channel to the station that submitted the RACH use Request.

It is significant to note that, in the rejection of claim 38, the Office action acknowledges that Take teaches termination of contention-based access when the channel state switches to the "occupied" state (Office action, page 10).

Because the combination of Take and Kanterakis fails to teach or suggest the broadcast of a provision message indicating a channel that is available to the plurality of terminals for contention-based access, in response to a request by a terminal for such a contention-based channel, as specifically claimed in claims 14 and 33, and because Take specifically teaches a contrary method of terminating contention-access on a channel in response to a request by a terminal for such contention-free access, the applicant respectfully maintains that the rejection of claims 14-19, 21-23, 33-34, 37-38, and 40 under 35 U.S.C. 103(a) over Take and Kanterakis is unfounded, and should be reversed by the Board.

Claims 24-32, 35-36, and 39

The Office action relies on the basis of rejection of claim 14 to support these rejections (Office action, pages 8-10). As noted above, the combination of Take and Kanterakis fails to teach or suggest the elements of claim 14, and Take specifically teaches a contrary channel control scheme. Accordingly, the applicant respectfully maintains that the rejection of claims 24-32, 35-36, and 39 under 35 U.S.C. 103(a) over Take and Kanterakis is unfounded, and should be reversed by the Board.

Claim 20 stand rejected under 35 U.S.C. 103(a) over Take, Kanterakis, and Crichton

Claim 20

In this rejection, the Office action relies upon the combination of Take and Kanterakis for teaching the elements of claim 14. As noted above, the combination of Take and Kanterakis fails to teach or suggest the elements of claim 14, and Take specifically teaches a contrary channel control scheme. Accordingly, the applicant respectfully maintains that the rejection of claim 20 under 35 U.S.C. 103(a) that relies on the combination of Take and Kanterakis for teaching the elements of claim 14 is unfounded, and should be reversed by the Board.

CONCLUSIONS

Because the combination of Take and Kanterakis fails to teach or suggest the broadcast of a provision message indicating a channel that is available to the plurality of terminals for contention-based access, in response to a request by a terminal for such a contention-based channel, and because Take specifically teaches a contrary method of terminating contention-access on a channel in response to a request by a terminal for such contention-free access, the applicant respectfully requests that the Examiner's rejection of claims 14-40 under 35 U.S.C. 103(a) be reversed by the Board, and the claims be allowed to pass to issue.

Respectfully submitted

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CLAIMS APPENDIX

1-13. (Canceled)

14. A wireless network, comprising:

a base station in communication with a plurality of terminals;

at least one terminal of the plurality of terminals operable to be assigned to a radio cell of the base station for exchanging user data and control data, the terminal being further operable to transmit a first signaling sequence as an indication to use one of a plurality of contention channels;

wherein the base station, upon receiving the first signaling sequence, is operable to broadcast a provision message indicating a channel that is available to the plurality of terminals for contention-based access.

15. The wireless network of claim 14,

wherein the terminal is further operable to transmit the first signaling sequence during a specific time slot of a transmitting-end reference frame; and

wherein, after receiving the provision message from the base station, the terminal is further operable to transmit at least one of a terminal identification and a data packet over the channel to the base station.

16. The wireless network of claim 14, wherein the base station includes:

a matched filter operable to generate a pulse; and

a peak detector operable to detect a peak of the pulse during a specific time slot of a receiving-end reference frame.

17. The wireless network of claim 14, wherein the terminal is further operable to transmit the first signaling sequence as one of a Gold sequence, a Kasami sequence or a Golay sequence during a specific time slot of a transmitting-end reference frame.

18. The wireless network of claim 14, wherein the terminal is further operable to transmit a second signaling sequence to the base station in response to a failure to receive an acknowledgement of the reception of the first signaling sequence by the base station within a predefined period of time after transmission of the first signaling sequence to the base station.

19. The wireless network of claim 14, wherein, subsequent to receiving the provision message, the terminal is further operable to transmit a second signaling sequence to the base station in response to a failure to receive an acknowledgement of a reception of data by the base station over an assigned contention channel.

20. The wireless network of claim 14, wherein the terminal is further operable to re-transmit the first signaling sequence to the base station with increased energy in response to a failure to receive an acknowledgement of the reception of the first signaling sequence by the base station within a predefined period of time after the first transmission of the first signaling sequence to the base station.

21. The wireless network of claim 14,

wherein the terminal is further operable to receive an identification of a specific time slot of a reference frame, and to transmit the first signaling sequence during the specific time slot; and

wherein, after receiving the provision message, the terminal is further operable to transmit at least one of a terminal identification and a data packet over a first contention channel to the base station in response to the provision message.

22. The wireless network of claim 14, where the first signaling sequence is one of a plurality of signaling sequences associated with the wireless network.

23. The wireless network of claim 22, wherein each signaling sequence is further associated with a different data rate.

24. A base station in a wireless network for exchanging user data and control data with a plurality of terminals operable to be assigned a radio cell, the base station comprising:

a receiver operable to detect a signaling sequence from at least one of the terminals; and

a transmitter operable to transmit a provision message in response to the signaling sequence, the provision message indicating a channel that is available to the plurality of terminals for contention-based access.

25. The base station of claim 24, wherein the receiver includes:

a matched filter operable to generate a pulse; and

a peak detector operable to detect a peak of the pulse during a specific time slot of a receiving-end reference frame.

26. A terminal operable to be assigned a radio cell in a wireless network for exchanging user data and control data with a base station, the terminal comprising:

a transmitter operable to transmit a first signaling sequence to the base station, the signaling sequence being indicative of a request for a channel to be made available for contention-based access by the transmitter; and

a receiver operable to receive a provision message from the base station subsequent to the transmission of the first signaling sequence by the transmitter, the provision message indicating the channel that is available to the terminal for contention-based access.

27. The terminal of claim 26,

wherein the transmitter is further operable to transmit the first signaling sequence during a specific time slot of a transmitting-end reference frame; and

wherein, after receiving the provision message, the transmitter is further operable to transmit at least one of a terminal identification and a data packet over the channel to the base station.

28. The terminal of claim 26, wherein the transmitter is further operable to transmit the first signaling sequence as one of a Gold sequence, a Kasami sequence or a Golay sequence during a specific time slot of a transmitting-end reference frame.

29. The terminal of claim 26, wherein the transmitter is further operable to transmit a second signaling sequence to the base station in response to a failure to receive an acknowledgement of the reception of the first signaling sequence by the base station within a predefined period of time after transmission of the first signal sequence to the base station.

30. The terminal of claim 26, wherein, subsequent to receiving the provision message, the transmitter is further operable to transmit a second signaling sequence to the base station in response to a failure to receive an acknowledgement of a reception of data by the base station over the channel.

31. The terminal of claim 26, wherein the transmitter is further operable to re-transmit the first signaling sequence to the base station with increased energy in response to a failure to receive an acknowledgement of the reception of the first signaling sequence by the base station within a predefined period of time after the first transmission of the first signal sequence to the base station.

32. The terminal of claim 26,

wherein the transmitter is further operable to receive an identification of a specific time slot of a reference frame, and to transmit the first signaling sequence during the specific time slot; and

wherein, after receiving the provision message from the base station, the terminal is further operable to transmit at least one of a terminal identification and a data packet over the channel to the base station in response to the provision message.

33. A method of exchanging user data and control data in a wireless network between a base station and a terminal operable to be assigned a radio cell, the method comprising:

transmitting a signaling sequence from the terminal to the base station, the signaling sequence being indicative of a request by the terminal to use a channel for contention-based access;

detecting the signaling sequence by the base station; and

broadcasting a provision message by the base station to the terminal in response to the request , the provision message indicating the channel that is available to the terminal for contention-based access.

34. The wireless network of claim 14,

wherein the terminal, upon receiving the provision message, is further operable to transmit a registration request to the base station, and

wherein the base station, upon receiving the registration request, is further operable to acknowledge the reception of the registration request to the terminal and assign the terminal to the radio cell.

35. The base station of claim 24, further comprising:

a registration element operable to acknowledge the reception of a registration request to the terminal and assign the terminal to the radio cell.

36. The terminal of claim 26, further comprising:

a requesting element operable to format a registration request to be transmitted to the base station in response to the provision message received from the base station.

37. The method of claim 33, further comprising:

transmitting a registration request to the base station from the terminal in response to the terminal receiving the provision message from the base station;

acknowledging receipt of the registration request by the base station; and

assigning the terminal to the radio cell.

38. The wireless network of claim 14, wherein the channel is available for contention-based access for a limited time period.

39. The base station of claim 24, wherein the channel is available for contention-based access for a limited time period.

40. The method of claim 33, wherein the channel is available for contention-based access for a limited time period.

EVIDENCE APPENDIX

No evidence has been submitted that is relied upon by the appellant in this appeal.

RELATED PROCEEDINGS APPENDIX

Appellant is not aware of any co-pending appeal or interference which will directly affect or be directly affected by or have any bearing on the Board's decision in the pending appeal.